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# INFRASTRUCTURE TEAM

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## NOAA Fisheries Wide Area Network (WAN) Operating Procedure

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#### Section 1. Purpose.

This operating procedure provides administrative guidance and best management practices for the review of changes, and addition of new sites to the NOAA Fisheries Wide Area Network (WAN).

#### Section 2. Scope and Applicability.

This guidance applies to all NOAA Fisheries WAN facilities, including sites currently connected or proposed for connection, and is promoted by the agency and its Chief Information Officer (CIO).

#### Section 3. Terms and Definitions.

**Access Control List (ACL)** - A list kept by routers to control access to or from the router for a number of services (for example, to prevent packets with a certain IP address from leaving a particular interface on the router). Access Lists control access by filtering according to allowed/disallowed by source addresses, destination addresses, directionality (incoming or outgoing), and by type of service.

**CSU/DSU** (Channel Service Unit/Data Service Unit) - A hardware device that converts digital data from the communications technology used on a local area network ([LAN](#)) into the communication technology appropriate to a WAN, and vice versa.

**Firewall** - Combination of hardware and software systems designed to help enforce a corporate security policy.

**Firmware** - Programming that is inserted into programmable read-only memory, thus becoming a permanent part of a computing device.

**Fisheries WAN** – The telecommunication lines, as well as the CSU/DSU and routers that terminate them, that connect all NOAA Fisheries offices to the agency's Intranet. Equipment shared by the WAN and the LAN is considered a part of the Fisheries' WAN for the purpose of this document.

**Frame Relay** – A telecommunication service designed for data transmission for intermittent traffic between LANs and between end points in a WAN.

**ISDN (Integrated Services Digital Network)** – A set of standards for digital transmission over ordinary copper telephone wire.

**IT Architecture** - The set of policies, principles, guidelines and best practices for acquiring, deploying and using information technology at NOAA Fisheries.

**LAN (Local Area Network)** - A high-speed (2 to 1000 Mbps) data communications system connecting devices in a building or group of buildings within a few square kilometers, including workstations, servers, peripherals, switches, gateways, and routers.

**Router** – A device that links a local network to another network; a router is typically used to connect one LAN to another LAN, WAN or the Internet.

**Routing table** - A series of instructions, installed on a router, which dictates how data are moved across a network.

**WAN (Wide Area Network)** - A computer network that spans great distances; it usually connects many LANs together.

**WAN Change (Routine)** - A modification of WAN hardware configuration with a total implementation cost of under \$5,000. These changes are considered by the WAN Change Review Board, with concurrence by the Fisheries CIO. Typical routine changes include router operating system/firmware upgrades, modifications to router WAN hardware, and the modification of WAN routing tables or an Access Control List.

**WAN Change (Significant)** – A modification or addition to the WAN with a total implementation cost of \$5,000 or greater. These changes are considered by the WAN Change Review Board, and then forwarded to the NIMB for consensus and the CIO for concurrence. Typical significant modifications include the addition of new sites, changes to the overall WAN security profile and the implementation of new technologies.

#### Section 4. Background and Need.

The NOAA Fisheries Wide Area Network (WAN) is a government network that interconnects NOAA Fisheries offices located around the United States, including Hawaii and Alaska. Since its inception in 1994, the WAN has supported general Internet connectivity, electronic messaging (e-mail), sharing of data between offices, and agency-wide applications, such as the Financial Reporting System. Funding of the WAN is a concern of the National Information Management Board (NIMB), which recommends expenditures from a congressionally appropriated PPA (Plans, Projects and Activities) for NOAA Fisheries computer operations. The process and procedures described in this document are needed to address three areas of WAN operations: configuration change control, the addition of new sites to the WAN and the funding of Fisheries WAN sites. Configuration change control is required in order to maintain an operational network. A simple change to a router's configuration can unintentionally introduce confusion in the routing process and result in loss connectivity to an individual site and, in some cases, the entire WAN. The addition of Firewalls and Access Control List (ACL) to the WAN environment also requires a closely adhered to configuration control process. Firewalls assist in securing NMFS infrastructure from the Internet. Changes to Firewalls must be done with great care to ensure they serve their intended purpose, while not limiting necessary access to WAN sites downstream. ACL, like Firewalls, limit access to the network. Because ACL's are deployed at the local router, changes made at a particular site do not typically affect other WAN sites. However, ACL changes can cause a loss of access to services at the site where the change was made, and can also result in easing the method by which security intrusions may occur. With both ACL's and Firewalls, once a trusted member of a WAN has been compromised, the same intruder may be able to victimize all members. With a decrease in telecommunication costs, and through savings generated by design improvements, PPA monies may be available to fund the addition of sites to the WAN. Originally, the only options available were Frame Relay, dedicated circuits and, to a lesser degree, ISDN. Today, Frame Relay is still the primary medium used on the Fisheries WAN, but lower-cost options such as Digital Subscriber Lines (DSL), cable modems, and satellites represent cost-effective means to provide WAN connections to NOAA Fisheries offices across the United States. However, improperly implemented technologies may introduce network security issues that have the potential for jeopardizing the entire WAN, and may result in an inappropriate level of connectivity for the office. Procedures for identifying and implementing the correct technology, with an appropriate level of

network security, will prevent such problems.

## Section 5. Responsibilities and Procedures

1. **Chief Information Officer (CIO).** Responsibility for the Fisheries WAN resides with the agency's Chief Information Officer.
2. **National Information Management Board (NIMB).** This advisory group recommends expenditures, consistent with the IT spending plan and other planning documents; develops and advises on information management policy; assesses regional and national information management needs and technology development; and oversees implementation of information management policy, procedures and guidelines.
3. **Fisheries Network Administrator.** Under the Fisheries CIO, the network administrator is responsible for the daily operation of the WAN, including the placing of all circuit orders with authorized service providers, configuring all WAN-related equipment, ensuring that network security is appropriate and maintaining up-to-date documentation of the network topology and WAN hardware configuration. The Network Administrator also serves as the Headquarters Information Management Technology Coordinator, and chairperson of the WAN Change Review Board.
4. **Information Technology Security Officer (ITSO).** Under the Fisheries CIO, the ITSO is responsible for the development and implementation of the NOAA Fisheries information technology security program.
5. **WAN Change Review Board.** The CIO is assisted in administering the WAN by the WAN Change Review Board, an agency technical advisory body established specifically to advise the CIO on requested or needed changes. Voting membership consists of the NOAA Fisheries Network Administrator, the Information Technology Security Officer (ITSO) and four of the ten Regional Information Technology Coordinators (RITCs), nominated by the CIO for rotating, one year terms; other information management officials may serve the Board in a non-voting, advisory capacity. In all cases, a quorum is reached when three of the Regional members are in attendance, along with the Network
6. **Local Area Network Administrator.** This is the individual responsible for operating the LAN within a NOAA Fisheries office, and who coordinates with the Fisheries Network Administrator on all WAN-related issues.
7. **WAN Configuration Changes.**
  - a. Policy. A Configuration change to an existing WAN site that has the potential to impact other WAN sites, or the addition of new sites, requires CIO approval. Configuration changes that must be approved by the CIO include:
    - i. Changes to WAN routing protocol
    - ii. WAN router operating system / firmware upgrades
    - iii. WAN router hardware modifications
    - iv. Modification of WAN routing tables
    - v. Modification to router Access Control List
    - vi. Modification to the WAN Circuit
  - b. Procedure. The following procedure is used for proposed changes to the WAN, including the addition of a new WAN site:
    1. The pertinent RITC will submit a WAN Change Request Form to the Fisheries Network Administrator. If a headquarters change is proposed, the Fisheries Network Administrator will prepare the Change Request Form. Information must include, at a minimum:
      - a. Name, telephone number, and e-mail address of the requestor;
      - b. Name(s) of site(s) for which the change is requested;
      - c. Model and serial number of affected equipment;
      - d. Functional description of the problem or enhancement; if a router change is requested, this includes an image of the proposed configuration;
      - e. Description of current conditions, and if there is a problem, the intended solution;
      - f. Anticipated benefits to the user and/or entire WAN that will result from the change;
      - g. Potential impacts on other WAN sites, if known; and
      - h. Pertinent information on any contract or other agreement associated with local use of the WAN site.
    2. For addition of a new WAN site. Information must include, at a minimum:
      - a. Name, telephone number, and e-mail address of the requestor;
      - b. Name(s) of site(s) to be added;
      - c. Number of users at each proposed site, and data requirements;
      - d. Proposed connection type (i.e., Frame Relay, DSL, dedicated circuit, etc.) and service provider;
      - e. Cost of circuit;
      - f. Network security plan for the new site (e.g., firewalls and ACLs) and
      - g. Pertinent information on any contract or other agreement associated with local use of the WAN site.
    3. The Network Administrator will log the Change Request for purposes of tracking, and evaluate the potential impacts of the requested change for security vulnerabilities, impact on other WAN sites and compliance with the following change standards:
      - a. Performance
      - b. Reliability
      - c. Maintainability
      - d. Interoperability
      - e. Compliance with IT Architecture; and
      - f. Resources required, including costs.
    4. The Fisheries Network Administrator will submit all routine change requests to the Change Review Board for review and recommendation. The Board will deliberate the request in consultation with a representative of the site requesting the change. Whenever possible, the Board should work with the submitting site to resolve problems associated with the request. If consensus--concurrence or disapproval--is not reached (every voting Board member agreeing), the Board will seek a simple majority decision. The Board will document the discussion points and, if not a majority opinion, reasons for dissent.
    5. For significant changes, the Change Review Board will deliberate the request, with the representative of the site requesting the change. Whenever possible, the Board should work with the submitting site to resolve problems. If consensus--concurrence or disapproval--is not reached (every voting Board member agreeing), the Board will seek a simple majority decision. The Board will document the discussion points and, if a majority opinion, reasons for dissent, and submit the Change Request and associated documentation to the NIMB for review and recommendations. The NIMB will submit its recommendation to the CIO for his/her concurrence or disapproval.
8. **Emergency Configuration Changes.** The LAN Administrator has the authority to make changes in the WAN router configuration in an emergency situation without approval from the CIO. The change will be documented and reviewed with the Fisheries Network Administrator the next working day to determine if this change should be established as the new baseline configuration or if the change should be rolled back to the original state.
9. **Procedures for Firewall Policy Modifications.** Fisheries' firewalls are maintained at the local level in accordance with Fisheries security policies. The Fisheries Network administrator will maintain a current configuration document for each Fisheries firewall, which is supplied by the local system administrator. When changes are made to a firewall, an updated configuration document with a description of the change will be provided to the Fisheries Network Administrator. The Change Review Board will review such changes for compliance with Fisheries Security policy. The Board will recommend methods for bringing firewall rules into compliance to the local system administrator.
10. **Procedures for funding recommendations of Fisheries WAN sites.** By the end of the third quarter of each fiscal year, the NIMB will determine if PPA funding should be used to support new or existing Fisheries WAN connections. Recommendations will be made in accordance with the NIMB Charter, and should be derived from system planning efforts.
  - a. The Fisheries Network Administrator will provide an updated budget projection for the current year's telecommunication costs, and a projection of the next fiscal year costs.
  - b. The Fisheries Network Administrator, in consultation with the RITCs and the CIO, will prepare a prioritized set of recommendations for sites that should be funded by the Fisheries PPA.
11. **Monitoring and Evaluation of Fisheries WAN sites and activities.**
  - a. The Fisheries Network Administrator should be notified of any anticipated change in Fisheries WAN operations other than those indicated in this document, change which has occurred without official approval, and problems with implementing an approved change. RITCs are expected to work closely with the Fisheries Network Administrator to monitor activities associated with the Fisheries WAN, especially compliance with pertinent directives and standards, network security issues, and anticipated policy, technology developments or other activities that may require WAN changes or additions.
  - b. At the direction of the CIO, a yearly report of Fisheries WAN operations will be prepared, including: all approved, implemented and disapproved change requests and additions; anticipated needs; compliance with pertinent standards; recommendations of the NIMB and WAN Change Review Board; and other such events and documents as will accurately portray the Fisheries WAN function. The CIO may submit a draft of this annual report to the NIMB for its review prior to finalizing the document.

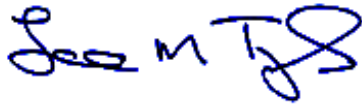
**Section 6. References.**

1. NOAA Administrative Order 212-13, Information Technology Security Management. <http://www.rdc.noaa.gov/~nao/212-13.html> and all referenced orders and guidance therein.
2. Department of Commerce Information Technology (IT) Restructuring Plan, Secretarial Directive, June 13, 2001.
3. NOAA IT Architecture Guidance <http://www.hpcc.noaa.gov/docita>
4. NOAA Fisheries Architecture Guidance [/arch](#)
5. Charter and Operating Agreement, NOAA Fisheries National Information Management Board [/itweb](#)

**Section 7. Effect on Other Issuances.**

None

SIGNED,



*Chief Information Officer,  
NOAA Fisheries*

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